

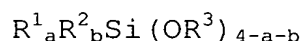
# WHAT WE CLAIM IS

1. An illumination apparatus for an optical instrument comprising an illumination means outputting illumination light and an optical element which is positioned on the light path of the illumination light outputted from the illumination means and which is made of organic/inorganic composite material.

2. An illumination apparatus for an optical instrument as claimed in claim 1, wherein organic component of the organic/inorganic composite material is a component having a glass-transition temperature higher than 150°C.

3. An illumination apparatus for an optical instrument as claimed in claim 1 or 2, wherein the organic/inorganic composite material contains at least one of components represented by the following general formula (1) or (2):

General Formula (1)



wherein  $R^1$  and  $R^2$  are the same or different organic groups,  $R^3$  is an alkyl group, an alkyl halide group, an aryl group or an aryl halide group of which carbon number is between 1 and 6, and "a" and "b" are integers between 0 and 2 and "a+b" is an integer between 0 and 2;

General Formula (2)



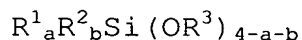
( $M^1$  is at least one of metal elements which is selected from

a group consisting of Al, Be, Ge, Hf, La, Mg, Sc, Ta, Ti, V, Y, Zn, and Zr, R<sup>4</sup> is an alkyl group, an alkyl halide group, an aryl group or an aryl halide group of which carbon number is between 1 and 6, and "n" is a positive integer as a valence of the metal element M<sup>1</sup>).

4. An illumination apparatus for an optical instrument as claimed in claim 1, wherein the organic/inorganic composite material contains a component having a glass-transition temperature higher than 150°C as its organic component and a component capable of transmitting lights in a range including the visible wavelength range and the ultraviolet wavelength range as its inorganic component.

5. An illumination apparatus for an optical instrument as claimed in claim 4, wherein the organic/inorganic composite material contains at least one of components represented by the following general formula (3) or (4):

General Formula (3)



wherein R<sup>1</sup> and R<sup>2</sup> are the same or different organic groups, R<sup>3</sup> is an alkyl group, an alkyl halide group, an aryl group or an aryl halide group of which carbon number is between 1 and 6, and "a" and "b" are integers between 0 and 2 and "a+b" is an integer between 0 and 2;

General Formula (4)



( $M^2$  is at least one of metal elements which is selected from a group consisting of Al, Be, Hf, La, Mg, Sc, Y, and Zr,  $R^4$  is an alkyl group, an alkyl halide group, an aryl group or an aryl halide group of which carbon number is between 1 and 6, and "m" is a positive integer as a valence of the metal element  $M^2$ ).

6. An illumination apparatus for an optical instrument as claimed in any one of claims 1 through 5, wherein the illumination apparatus for the optical instrument is an illumination apparatus for a microscope.